DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Indian Health Service
Rockville MD 20857

To: Director, Office of Facilities Services

From: Chief, Project Development Branch

Subject: Reporting Requirements for FY 1998 Annual Energy Reports

The first phase of the Annual Energy Report, due September 18, 1998, is enclosed.

The 11 Area offices collect and compile thousands of utility bills from several thousand buildings to produce their Annual Energy Report. Their deadline of November 1 allows them enough time to compile their September utility bills. These bills can not be collected until mid October. Your early deadline of September 18 precludes us from using Fiscal Year (FY) 1998 data. We are therefore submitting FY 1997 data.

In the first paragraph of your September 1 Memorandum you mentioned that you would send new guidelines for the narrative portion of the annual energy report. Unless we receive these new guidelines soon we may not be able to include significant changes.

I trust that this attachment will meet the Phase 1 requirements for Attachment A.

William M. Lowe

Attachments

DEPARTMENT OF HEALTH & HUMAN SERVICES

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SEP 16 1998

To: Director, Office of Facilities Services

From: Chief, Project Development Branch

Subject: Reporting Requirements for FY 1998 Annual Energy Reports

The first phase of the Annual Energy Report, due September 18, 1998, is enclosed. We apologize that yesterday's version was missing Attachment B.

We are expecting to give you more up-to-date information by the end of November when the 11 Area offices have finished compiling their utility bills for FY 1998.

We have indeed received the new guidelines for the narrative portion of the annual energy report and we will be forwarding these guidelines to the Area Offices today.

I trust that this attachment will meet the Phase 1 requirements for Attachment A.

William M. Lowe

Attachments

Indian Health Service

FY 1998 Energy Report

November 17, 1998

Indian Health Service
FY 1998 Energy Report

Table of Contents

INTRODUCTION

In 1985 the Indian Health Service (IHS) consumed 1,414,011 MMBtu of energy at a rate of 186,095 Btu/GSF. Since 1985 the IHS has reduced its energy rate by 7.2 percent and currently consumes 1,186,115 MMBtu at a rate of 172,660 Btu/GSF.

The decrease of 7.2 percent can be attributed to better and more efficient designs, expansion of building automation systems, replacement of inefficient lighting, and better operational procedures. However at this rate we will not be able to achieve the 20% reduction goal for the year 2000.

A. ANNUAL ENERGY MANAGEMENT DATA REPORT

I. Energy Consumption and Cost Data

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1998
PREPARED BY:	Adam Scully, P.E.	TITLE:	Sr. Asst. Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 23, 1998

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Costs 1000's	Unit Cost ($)	Total MMBtu
Electricity	KWH	130,272,257.	$ 8,486.0	$0.065 per kwh	444,488
Fuel Oil	Thous. Gal.	1,343.8	$ 1,304.4	$0.97 per gal	186,387
Natural Gas	Thous.Cu.Ft.	414,148	$ 1,544.0	$3.728 per 1000 CuFt	426,986
LPG/Propane	Thous. Gal.	1,343	$ 873.3	$0.65 per gal	128,254
TOTALS	---	---	$ 12,207.7	---	1,186,115

Gross Square Feet	Btu/Gross Square Feet	$/Gross Square Feet
6,869,652	172,660	1.78

II. Energy Conservation Program Summary

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1997
PREPARED BY:	Adam Scully, P.E.	TITLE:	Staff Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 10, 1997

DIRECT AGENCY EXPENDITURES

Direct expenditures on facility energy efficiency improvements

Annual Expenditures (Thous. $) Current Fiscal Year 1,456

Annual Expenditures (Thous. $) Next Fiscal Year 2,004

Annual savings anticipated from expenditures 8,900 MMBTU 24,090(Thous. $)

ENERGY SAVINGS PERFORMANCE CONTRACTS

Number of ESP contracts awarded None

Annual savings anticipated from ESP contracts None

UTILITY INCENTIVES

Incentives received None (Thous. $)

Funds spent in order to receive incentives None (Thous. $)

Annual savings anticipated from DSM activities None MMBTU

TRAINING

Current year expenditures for energy management training 22.5(Thous. $)

Number of personnel trained 23

SUMMARY OF ALTERNATIVE TRANSPORTATION FUEL USAGE

Vehicles (required by EPACT Sec. 308)

Number of dedicated alternative fuel vehicles None

Fuel consumed in dedicated AFVs 0 (Thous. GEG)

Number of dual-fuel alternative fuel vehicles None

Fuel consumed in dual-fuel AFVs 0 (Thous. GEG)

Fuel (required by EPACT Sec. 303)		Annual Consumption	Cost (Thous. $)
Biodiesel	Thous. Gal.	None	
Electric	KWH	None	
Ethanol	Thous. GEG	None	
Hydrogen	Thous. GEG	None	
Liquified Petroleum Gas (LPG)	Thous. GEG	None	
Methanol	Thous. GEG	None	
Natural Gas (CNG or LNG)	Thous. GEG	None	
Other	Thous. GEG	None	

B. ENERGY CONSUMPTION REDUCTION GOALS

The Indian Health Service (IHS) physical plant consists of 37 hospitals, 61 Heatlh centers, 4 school health centers, 48 smaller health stations, 5 YRTCs, 5 ASAPs, and 2100+ quarters. The reported energy cost for Fiscal Year 1997 was $12,208,000.

The IHS annual energy consumption goals are consistent with the Energy Policy Act of 1992 and Executive Order 12902. Our goals are to reduce energy consumption 20 percent by year 2000, and 30 percent by year 2005. These reduction goals are based on 1985 energy consumption data.

C. ENERGY SAVINGS PERFORMANCE CONTRACTS

ABERDEEN - The Department of Energy (DOE) —The Aberdeen Area has a Memorandum of Understanding (MOU) with DOE which will allow ES-S to award an ESPC to a prequalified contractor, Johnson Controls, Inc. Johnson Controls is presently preparing a proposal for an ESPC for all IHS facilities in the Aberdeen Area. The proposal will be completed in January 1999 and ES-S will evaluate the proposal and award the ESPC if the proposal is acceptable. ES-S is anticipating a 15 year contract period.

The contractor will determine the scope of work in their proposal. The Area anticipates the work will include lighting retrofit projects, installation of energy management systems, and possibly some mechanical system upgrades.

One concern in awarding an ESPC is the contractors expectations for the operation and maintenance of contractor-installed equipment. The Area will work with ES-S to clarify this issue prior to contract award. Another concern is payment to the contractor under a long term contract. The Area will work closely with ES-S and the contractor on this issue prior to contract award.

ALBUQUERQUE - The Albuquerque Area has not entered into any performance contracts, nor does it have any plans in the immediate future to do so.

BILLINGS - At the present time, there are no specific energy saving performance contracts in place.

OKLAHOMA - An ESPC is being pursued for the Creek Nation via a Performance Agreement for Comfort from Trane (PACT) Program. A letter to proceed, which is not a financial commitment, has been authorized by the Muscogee (Creek) Nation Health Systems Board. A preliminary facility analysis was conducted and potential energy conservation measures (ECM's) were identified for The Creek Nation Community Hospital in Okemah. These ECM's include operational and maintenance savings, lighting upgrades, a new air cooled chiller, new air handling units, and a new HVAC control system. Health clinics in Sapulpa, Eufaula, and Okmulgee are also being analyzed for ECM opportunities such as monitoring and controlling their HVAC control systems from the hospital in Okemah. Tribal and Area Office staff has worked closely together by providing utility bills, drawings, clinic operating characteristics, and capital budget information to the Trane Company. The next steps include : a Letter of Commitment, a Comprehensive Engineering Study, Presentation of Final PACT Proposal, Project Approval, Construction, and Acceptance.

A Super ESPC is being pursued through the Department of Energy (DOE) for the Oklahoma City Area I.H.S. The service units we are concentrating on are located in Claremore, Tahlequah and Lawton. We met with a DOE contracting officer's representative (COR) and a National Renewable Energy Laboratory (NREL) representative at Tahlequah to preview potential projects. We met with a DOE COR at Claremore to preview potential projects also. We believe we have enough ECM's with combined short and long term paybacks to make viable projects at both locations. We also believe we have a viable project at Lawton. Our Area Office has a signed memorandum of understanding (MOU) with DOE that will permit us to access their contract for their Central Region. The six energy service companies (ESCO's) that were awarded indefinite delivery indefinite quantity (IDIQ)

contracts for the DOE central region are DukeSolutions, Energy Pacific, ERI, Honeywell, Johnson Controls, and Noresco. DukeSolutions, Energy Pacific, and ERI have traveled to Oklahoma City and met with us to discuss the capabilties of their companies. Our technical and procurement staff have recently attended the DOE Super ESPC Workshop to learn the process for writing delivery orders against the DOE contract. The 14 technology categories which are eligible under the contract are : Boiler Improvements, Chiller Improvements Building Automation Systems/Energy Management Control Systems, HVAC, Lighting, Envelope Modifications, Steam and Hot/Chilled Water Piping, Electric Motors and Drives, Refrigeration, Electrical and Cogeneration Systems, Renewable Energy, Electric Distribution, Water and Sewer Conservation, and Rate Reduction/Auditing Services. We believe we have projects in most of these technology categories. We have consulted with a spokesman for The Cherokee Nation to discuss a future tribal financial obligation in the event of a compact of the Claremore and Tahlequah Service Units. We have obtained their concurrence on proceeding with the Super ESPC. We are also obtaining an opinion from our Office of General Council on the restrictions of our agency entering into a long term financial obligation or transferring such an obligation to a tribe.
The Dallas Inter-Tribal Center and the American Indian Center in Euless, Texas have been informed that they could pursue an ESPC directly with one of the six ESCO's or another ESCO of their choosing.

PORTLAND - No energy savings performance contracts (ESPCs) have been determined to be justifiable for the Portland Area. There is no information to report for FY 1998.

D. ENERGY EFFICIENCY AND WATER CONSERVATION PROJECT FUNDING

Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects. For FY 1999 the IHS Headquarters has recommended the following target levels for Energy Surveys and Energy Projects:

Area Office	Energy Surveys and Projects (minimum level)
Aberdeen	115,000
Anchorage	299,000
Albuquerque	66,000
Bemidji	82,000
Billings	75,000
California	59,000
Navajo	153,000
Nashville	51,000
Oklahoma	121,000
Phoenix	113,000
Portland	77,000
Tucson	23,000
Total:	$1,234,000

ABERDEEN - Energy projects have just been completed at the Sioux San Hospital in Rapid City (energy management system) and at the Rosebud Hospital (mechanical upgrades). These two

projects along with a few small projects were completed specifically to reduce energy consumption at these facilities. To date, water conservation projects have not been considered for funding.

ALBUQUERQUE - Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects. For example, the Albuquerque Indian Hospital has been undergoing extensive renovation during the past 3 years, with major energy savings expected from the elimination of the large central boilers and chiller. These were replaced by a thermal ground source heat pump loop system, with constant-temperature water being pumped out of the ground and circulated through the heat pumps. Other projects such as replacing lighting with more efficient T-8 lamps and electronic ballasts are also funded out of M&I funds.

ANCHORAGE - The following projects have been accomplished, initiated, or planned in order to meet the objectives of the plan to reduce energy consumption in federal facilities. Currently more than 10% of the funding for projects passed on to the health care facilities address increased energy efficient aspects. IHS funded Health Care facilities in Alaska are addressing and reducing energy consumption on a per SF basis and will continue in order to meet the federal energy objectives by the Year 2005.

Samuel Simmons Memorial Hospital, SSMH (Barrow):
SSMH plans to replace older T-12 lighting tubes and magnetic ballast's as they fail with T-8 tube technology and electronic ballast's to improve energy efficiency. This is expected to save energy in the remodel spaces and expansion projects. This work is anticipated to be on going for the next few years as various aspects of the Master Plan are completed.

Kotzebue Hospital, Maniilaq Health Corporation, MHC (Kotzebue):
The hospital maintenance staff is currently implementing the replacement of the fluorescent T-12 lamps with T-8 and electronic ballast's which will result in an energy savings to the facility. Presently the T-12 Rapid Start Lamps, F40SPX35/RS/WM, 3500K, CRI 82, are being utilized with an initial output of 2850 lumens. The replacement FO32/835 Sylvania Octron lamp is a 3500K color temperature and CRI of 82 at 2950 initial lumen output, a higher efficiency lamp. Using the 90% BF electronic ballast will yield a very high lumen per watt output compared with the T-12 system, while not compromising color or illumination levels. A net overall reduction of electrical demand of approximately 42 kW and an annual saving of about 120,000 kWh is expected in the first year of the retrofit. This project is scheduled for completion in FY 1999.

Norton Sound Regional Hospital, NSRH (Nome):
Three projects are currently on-going that will significantly affect energy efficiencies at the Nome Hospital. Currently replacing 3 old low-pressure steam boilers with two energy efficient hydronic boilers utilizing a VFD pumping systems is 90 % complete. Completion is scheduled for early November 1998 for this project.

Replacement of the original high pressure steam generator with a new energy efficient steam generator sized for the current facility needs is 100 % complete. This was constructed in the third quarter of 1998.

Replacement of the out of date medical waste incinerator with a new state of the art continuous burn batch process is 95 % complete at this time. Completion is scheduled for early November 1998 for this project.

The addition of mechanical cooling to the hospital HVAC system in order to keep up with summer cooling requirements in the core of the hospital is anticipated for completion in FY 1999. This project will increase the energy requirement by addition of an estimated 30-ton chiller unit. Design for this has been initiated as of this writing.

Yukon Kuskokwim Regional Hospital Corporation, YKRHC (Bethel):
Main Entrance Up-Grade - The expansion and up-grade of the existing front entryway to the hospital included installation of energy efficient glazing and air curtains to divert heat from exiting the building when person's enter or exit the facility. These additions will reduce the loss of heat in the patient waiting area just inside the main entryway, thus improving energy efficiency and patient comfort at the same time. This work is anticipated for completion in FY 1999.

Lighting retrofit project – YKRHC plans to replace fluorescent lighting with the more efficient compact fluorescent lamps and T-8 light tube technology with electronic ballast's in the near future. This is expected to save approximately 30KW and approximately 100,000 kWh's per year, and is anticipated for completion in FY 1999.

Kanakanak Hospital, Bristol Bay Area Health Corp., BBAHC (Dillingham):
Lighting retrofit project – BBAHC plans to replace fluorescent lighting in the hospital and administration buildings with the more efficient compact fluorescent lamps and T-8 light tube technology with electronic ballast's in FY 1999. This is expected to save approximately 30KW to 40KW and approximately 100,000 kWh's per year. The remodel spaces and expansion projects, like the Emergency Room Remodel/Addition project, all have the new energy efficient lighting systems included. This work is anticipated for completion in FY 1999.

The recent addition of the HVAC system to the administration building, while increasing the energy requirements, have incorporated the state of the art technologies and energy reduction strategies to minimize the additional or wasteful energy requirements. This project will be complete in late November 1998.

In-patient window replacement – Replacing windows in the in-patient area will eliminate the infiltration of outside air and moisture and improve the R value from 2 to 5, thereby saving energy in this area of the hospital as well as serving patient comfort. This project is anticipated for completion in FY 1999.

The addition of a Direct Digital Control System (DDC) will be added to the Hospital Complex to more efficiently monitor and controlling major building equipment. The system is 95% designed at this time and will be installed in FY99. Improvements to energy efficiency are predicted for operating the HVAC, chiller, heat recovery and domestic hot water, and electrical systems for the hospital and administration buildings.

Alaska Native Medical Center, ANMC (Anchorage):
ANMC is a new medical center with the state of the art Direct Digital control, energy monitoring and management systems. The operators are not yet familiar with the full capabilities of these Facility Management System's (FMS) and is anticipated that through on-hands experience and training the staff will learn to optimize the building systems like HVAC, heat recovery, cooling and snow melt systems utilizing the FMS in harmony with the building needs and energy signature.

ANMC Proposed Energy Project # 1
The Facility Manager plans on some energy related design investigations into a ground water source supplemental cooling system to supplement the building cooling capability. This project proposes to use groundwater from a drilled well adjacent to the Energy Plant at ANMC through a heat exchanger to provide chilled water, in lieu of utilizing the three existing 335 cooling ton each York Rotary Screw Chillers. Chiller usage amounts to approximately 1,064,400 KW-hr per year of energy usage. The budgetary cost estimate for provision and proposed use of 38 degree F. groundwater (through a heat exchanger to generate 44 degree chilled water for cooling) is approx. $ 185,000. The estimated energy

charge savings is projected to be approx. $ 50,000 per year; which results in a less-than-4-year capital project pay-back, with the resultant cost (energy) savings of over $50,000 per year after Year-4 and on into the future.

ANMC Proposed Energy Project # 2
The next energy project to be accomplished at ANMC involves implementing energy saving measures on the lighting and HVAC system. Many spaces in the hospital are occupied 8-10 hours per day, such as the Dental Space, and the lighting circuits can be controlled by a DDC timer and motion sensor to allow for a night set back condition. The VAV boxes may also be controlled to reduce the air to the spaces when un-occupied; both air and lighting can be restored upon unscheduled occupancy or maintenance activity via the occupancy sensors, or digital timer override switches replacement for the traditional wall mounted toggle switch. The DDC system will also be utilized to control space lighting and air delivery based on the space function/occupancy requirements.

Southeast Area Regional Hospital Corporation, SEARHC (Sitka):
This hospital building was built in 1948 as a concrete structure and converted to a hospital in 1954 with out any ventilation. This six-story building is currently undergoing re-model to enhance the air quality by adding external ventilation in phases by floor. The HVAC equipment being installed is energy efficient as practical, but the bottom line is that additional air supply to the building requires additional heat/energy; and therefore the building is going to increase in energy per square footage as HVAC projects are completed. As areas are re-modeled the new energy saving T-8 lighting fixtures are used to replace older technologies. This facility is currently 120-133,000 BTU/SF/YR making it the most energy efficient hospital in the IHS Alaska Area.

Alaska Area Health Clinics:
Currently there are various small projects to address energy are on going with the Health Clinics in Alaska. The Tanana Chiefs Conference Inc. (TCC) has a lighting retrofit project and fan replacement with variable speed drives to address more energy efficiencies. The Health Clinic in Metlakatla is replacing an old electrical heating system with a new boiler and baseboard hydronic heating system, and the addition of ventilation, which will cure sick building syndrome but consume more energy. It is anticipated completion of these projects in FY 1999. It is likely to see more BTU's per SF for the ventilation system additions.

BEMIDJI - Energy reduction projects are funded from Maintenance and Improvement Funds.

BILLINGS - The Facilities Management Branch utilizes Maintenance and Improvement (M&I), Quarters, and Medicare/Medicaid (M&M) funds to construct, repair, and retrofit the medical facilities and quarters in Montana and Wyoming with energy efficient systems. Energy efficient lighting systems, building insulation materials, HVAC energy management control systems, and fuel source conversions (i.e., electrical to propane) have all been designed into various projects this year.

PORTLAND - Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects within the Portland Area.

TUCSON - Funding for energy/utilities management and conservation comes from M&I operations and project funds, and from the Energy surveys and projects fund. The amounts of FY98 funds in each account:

M&I Operations	$382,000
M&I Projects	$263,000
Energy Surveys & Projects	$0

The only funds specifically designated for energy projects are from the energy surveys and projects fund. The M&I operations fund is for repair parts, repairs, maintenance, small contract jobs, and

other daily maintenance operations. The M&I projects fund is for any other projects requested. Due to the depreciating infrastructure in buildings, equipment, utilities, paving, and fences, the projects fund cannot meet all requirements.

E. ENERGY AND WATER SURVEYS AND AUDITS

Both NECPA and EO 12902 require Federal agencies to perform energy and water surveys and audits. EO 12902 details the requirement by specifying prioritization surveys and comprehensive facility audits and by mandating all facilities to be audited within ten years.

I. Prioritization Surveys

ABERDEEN - The Aberdeen Area has 28 healthcare facilities – 8 hospitals, 7 health centers, 11 health stations, 1 youth treatment center, and 1 leased health center. To date, comprehensive energy audits have been completed at all 8 hospitals and 4 health centers. The Aberdeen Area began completing comprehensive energy audits in fiscal year 1995. The goal was to complete audits of the main facility at each of the hospitals and health centers.

ALBUQUERQUE - Prioritization Surveys were not necessary, since 4 out of the 5 area hospitals were audited last year. The fifth hospital (Albuquerque Service Unit) is under major renovation and being converted to a very energy-efficient HVAC system, so no audit is planned at ASU.

BILLINGS - No energy and water surveys or audits were conducted at the Service Units this year.

PORTLAND - A preliminary energy audit questionnaire was performed at each Area Service Unit in FY 1995. All IHS owned facilities were included in the survey. The survey collected the overall facility information and major energy using systems/equipment information. This information was assessed to produce a prioritization schedule.

TUCSON - The initial energy management surveys were conducted in 1986 and 1993, and a portion of each Deep Look survey involved energy management. In addition, an energy study was conducted for the Sells Hospital in 1991.

The 1982 survey of San Xavier and Santa Rosa states that the two facilities were operated in an energy efficient manner and that "Energy saving retrofit projects are not cost effective when applied to energy efficient facilities." The report does state that some mechanical renovations and automatic controls would save energy. Further, the report stated the use of the incinerator and exercise of the generator at Santa Rosa caused 20% of the total energy use; both have been discontinued.

The 1982 survey of Sells says that the compound exceeds the Department of Energy goals by 13.5%. It also said that architectural renovations would not produce sufficient savings to justify the expenditure. The report recommends some mechanical renovations to save energy, and also the installation of gas meters to identify major users of LPG. Since that time, the quarters have been removed from the central LPG system and each quarters building is individually metered. The LPG system servicing the hospital has been replaced.

The findings of the 1991 Sells study recommended replacement of some equipment, reviewing equipment sizing to optimize efficiency, reviewing design parameters on outside air quantities to reduce HVAC energy requirements, and making some operational changes to reduce energy use.

The initial surveys have been conducted. Two major mechanical renovation projects at Sells and San Xavier have incorporated many of the recommendations, and another major

renovation project at Sells should begin in FY99. This project will implement other conservation measures. Following the completion of the project, another survey may be needed to re-assess the energy conservation status.

II. Comprehensive Facility Audit

ABERDEEN - Of the Areas 28 facilities, comprehensive energy audits were completed at 12 of the facilities. The total area surveyed to date 54% of the gross floor area. The remaining 46% will be surveyed in future fiscal.

ALBUQUERQUE - In the Albuquerque Area, energy audits were completed on all the hospitals, except the Albuquerque facility which is undergoing extensive renovation. Energy Audit Reports were completed in 1997 for Acoma-Canoncito-Laguna, Zuni, Mescalero, and Santa Fe Indian Hospitals.
Comprehensive Facility Audits were completed for 4 out of the 5 major facilities in the Albuquerque Area. Following is a summary of the recommendations from these audits:

INSTALLATION NAME	DATE OF AUDIT	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY
Acoma-Canoncito-Laguna Hospital	Jan. 1997	Retrofit fluorescent and incandescent lighting; install an Energy Management System for Central Plant and for AHUs; connect steam sterilizers to existing boiler; replace existing chillers with high-efficiency screw chillers; replace solar, domestic hot water, and condenser water shell and tube heat exchangers with flat plate; convert AHU to VAV; install premium efficiency motors; reduce water flow.
Mescalero Hospital	March 1997	Retrofit lighting; install energy management system; replace existing boilers; replace shell and tube heat exchangers with flat plate heat exchangers; convert AHUs to VAV; install premium efficiency motors; reduce water flow.
Santa Fe Indian Hospital	Jan. 1997	Retrofit lighting; install energy management system; remove steam sterilizer and install new high-efficiency boiler; replace heat pump chiller with screw chiller; replace shell and tube heat exchangers with flat plate; convert AHUs to VAV; install premium efficiency motors; install new cooling tower fan VSD; install 2-way control valves; reduce water flow.
Zuni Hospital	Feb. 1997	Retrofit lighting; install energy management system for central plant and AHUs; remove steam sterilizers/connect to new small boiler; replace 2 existing boilers with 3 new boilers; replace shell and tube heat exchangers with flat plate heat exchangers; install control valves on AHUs steam coils; convert AHUs to VAV; install high-efficiency motors; reduce water flow.

The Albuquerque Area does not plan any additional energy audits. The Area plans to implement justifiable Energy Conservation Measures as funding becomes available. A summary of the Albuquerque Area comprehensive facility audit is provided in the following tables.

1. Number of Locations: **5**
2. Energy Audits within last 3 years: **4**
3. % of all facilities with Energy Audits: **80%**
4. Number of New Facilities* designed to Energy Standards (within the last 3 years): **1**
5. Total Percentage of Facilities with recent audits and/or new facilities designed to standards:**100%**

*ASU's mechanical and electrical systems are being completely renovated, so it's included as a "New Facility" in this report.

BEMIDJI - Sixty-seven percent of space received comprehensive facility audits. The remaining audit will be completed by FY 2000.

PORTLAND - Comprehensive energy audits will be performed at a minimum of ten percent of the Portland Area IHS facilities annually. Audits have been prioritized as follows:

ENERGY AUDIT CHRONOLOGY			
Scheduled Year of Audit	**Service Unit**	**Year of Previous Audit**	**Number of Years Between Audits**
1996	Colville –**Completed**	1986	10
	Neah Bay – **Completed**	never	N/A
1997	Warm Springs – **Completed**	1992 (new bldg) 1986 (old)	5 9
	Northern Idaho – **Completed**	1986	9
1998	Wellpinit – **In Progress**	1986	12
	Taholah – **In Progress**	1992	6
	Fort Hall	1994	5
	Northwest Washington	1992	7
	Western Oregon	1992	8
	Yakama	1994	6
	Puyallup	1992	9
	YTC, Spokane	1995	6

As shown in the above, except for the two energy audit currently in progress, the Portland Area has completed all energy audits in accordance with Executive Order #12902.

Plans for implementing justifiable Energy Conservation Measures identified in comprehensive energy audits will be prepared within 180 days (resources permitting) of receipt of energy audit reports.

Program Assessment Mechanism. The following have been identified as performance indicators for the Area energy management program:

a. Goals for energy consumption have been established.

b. The majority of the Portland Area Service Units are achieving the established energy consumption goals.

c. Preliminary energy audits were performed at all IHS facilities.

d. Prioritization of audits was established based on data from the preliminary energy audits.

e. All required energy consumption reports have been submitted to Headquarters.

f. All required energy consumption reports have been submitted on time.

The preliminary energy audits were completed by questionnaire and were based on the questions in Appendix A of the *Architect's and Engineer's Guide to Energy Conservation in Existing Buildings, Volume 1 - Energy Use Assessment and Simulation Methods, April 1990.* Preliminary energy audits were completed at all locations in the Portland Area by September, 1995. The preliminary audits have been used to determine which locations will receive comprehensive energy audits through fiscal year 2001. Comprehensive facility audit information for **IHS owned and leased facilities** for previous years is provided in the following tables.

SUMMARY OF ENERGY AUDITS IN THE PORTLAND AREA

Number of Locations:	12
Energy Audits within last 3 years:	6
Percentage of all facilities with Energy Audits:	100%
Number of New Facilities designed to Energy Standards (within the last 3 years):	0
Total Percentage of Facilities with recent audits (last 5 years) and/or new facilities designed to standards:	75%

Table for Portland IHS-Owned Facilities
Comprehensive Facility Audit for IHS Owned Facilities

Installation Name & No	ENERGY AUDIT PERFORMED	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST ($) (est)	Pay-back (years)

Installation Name & No	ENERGY AUDIT PERFORMED	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST ($) (est)	Pay-back (years)
Colville Service Unit 11551	Yes PO6CL008C6	1997	Audit accomplished in-house at Engineering Services. Final report submitted. COMPLETED.	N/A	N/A
			Recommendation to install floor insulation. PENDING.	$4,500	<2
			Recommendation to adjust HVAC. Air balance report is pending previous project PO0CL455C6. PENDING.	$200	<1
Fort Hall Service Unit 11491		1990	New facility designed to contemporaneous energy standards. COMPLETED	N/A	N/A
	Yes L.A. Olson	1994	Analysis of Energy Usage (to confirm 1990 design). COMPLETED.	N/A	N/A
Neah Bay Service Unit 30067	Yes PO6NB008C6	1996	Recommendation to reset thermostat settings during unoccupied periods. COMPLETED FY 1997	$10	0.03
			Recommendation to replace existing window seals. Note: All windows replaced in FY 1997. COMPLETED FY 1997	$500	4
			Recommendation to replace interior light fixtures with new lamps and ballasts. - Implementation plan in place at the Service Unit. PENDING.	$7,673	6

Installation Name & No	ENERGY AUDIT PERFORMED	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST ($) (est)	Pay-back (years)
			Recommendation to install timer for domestic hot water circulation pump. Implementation nearly complete. Completed.	$300	9
No. Idaho Service Unit 20944	Yes	1997	DOE/FEMP no cost audit. COMPLETED FY 1997.	N/A	N/A
			Recommendation to retrofit lamps and ballasts for main level of clinic. Action PENDING.	$2,905	4.8
			Recommendation to remove fixtures in basement office. Action FUNDED.	$150	3.3
			Recommendation to install domestic hot water recirculating pump timer. Action FUNDED.	$150	1.3
NW Wash. Service Unit 37567	Yes Kerner/Fisher	1992	Comprehensive Audit. COMPLETED.	N/A	N/A
	No PD9NW002C6	10/94	Install energy management time clock. COMPLETED	$2,049	0.2 Years
			Install floor insulation. COMPLETED	$21,789	4.5 Years
			Install occupancy sensors. COMPLETED	$89	3.7 Years

Installation Name & No	ENERGY AUDIT PERFORMED	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST ($) (est)	Pay-back (years)
			Construct main entrance vestibule. COMPLETED	$9,785	12.8 Years
	No PO7NW002C6	1997	HVAC System Upgrade	$400,000	
Puyallup Service Unit 35776	No	1992	New facility designed to contemporaneous energy standards. COMPLETED.	N/A	N/A
Taholah Service Unit 20611	Yes Kerner/Fisher	1992	Comprehensive Audit. COMPLETED.	N/A	N/A
	Yes PO8TA008C6	1998	Comprehensive Audit IN PROGRESS		
	PD2TA004C6	1992	Install energy management system. COMPLETED	$2,049	0.5 Years
		1992	Install floor insulation. COMPLETED	$8,604	1.6 Years
		1992	Install new ventilation system. COMPLETED	$15,843	12.5 Years
Warm Springs Service Unit 11542	Yes Anderson	1986	Audit (Old Health Center). COMPLETED	N/A	N/A
	PO7WA002C6	1997	Audit of Quarters. (Cost included in cost of Tribal Health and Wellness Center) PENDING	N/A	N/A
Wellpinit Service Unit 11553	Yes Anderson	1986	Audit. COMPLETED.	N/A	N/A

Installation Name & No	ENERGY AUDIT PERFORMED	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST ($) (est)	Pay-back (years)
	Yes PO8WE003C6	1998	Comprehensive Audit IN PROGRESS		
W. Oregon Service Unit 11540	Yes Kerner/Fisher	1992	Install automatic control system for HVAC in FY 1997 in project PO6WN008C6. COMPLETED	N/A	N/A
Yakama Service Unit 19712	Yes Anderson	1987	Energy analysis of new construction. COMPLETED	N/A	N/A
	Yes L.A. Olson	1994	Analysis of energy usage in the old facility. COMPLETED	N/A	N/A
Youth Treatment Center / ITC 41217	Yes	1995	New facility designed to current energy standards. COMPLETED.	N/A	N/A

TUCSON - These audits have yet to be completed. The guidelines and scope for conducting these audits have not yet been written. The audits will be conducted by Architect/Engineer contractors. The transfer of functions from Engineering Services to the Area may delay completion.

F. IMPLEMENTATION OF ENERGY EFFICIENCY AND WATER

ABERDEEN - The Aberdeen Area has completed energy audits at 12 of 28 locations prior to fiscal year 1998. These audits have been used to provide data for the Area-wide energy savings performance contract which is expected to be awarded in fiscal year 1999. Energy and cost savings data will not be available until the contract is awarded.

ALBUQUERQUE - The major implementation of energy-related projects this year in the Albuquerque Area has been the renovation of the Albuquerque Indian Hospital. Phase 3A of the construction was completed in April 1998 which involved finishing the 4th floor for inpatient. The boilers and chillers were taken off-line in 1997 and part of the hospital is now being served by the ground-source thermal water closed loop system, with both individual and roof-top heat pumps for heating and cooling. This system now serves the north wing of the 2nd and 3rd floors and all of the 4th floor and the Outpatient Department. The east and west wings will be converted to heat pumps as part of Phase 4 and 5 construction. Natural gas usage dropped from 61,355 CCF in FY97 to

47,381 in FY98, however KWH usage increased 73% to 956,000 KWH in FY98.

BILLINGS - Since there were no energy audits conducted, no "official" deficiencies were eliminated. However, energy conservation projects were conducted as follows:

SERVICE UNIT	PROJECT	COST
Blackfeet	Replace Furnaces with Energy Efficient Types in Quarters	$2,496
Fort Belknap	Replace Furnaces with Energy Efficient Types in Quarters	$8,135
Fort Peck	Insulate Quarters	$12,335
	TOTALS:	$22,966

OKLAHOMA - Projects completed in FY98 are as follows :

1. Replace 50 HP motor on AHU#5 - A standard efficiency 50 horsepower motor with inlet guide vanes was replaced with a 50 premium efficiency 50 horsepower motor with an Asea Brown Boveri adjustable speed drive. Estimated Payback (3.5 years)

2. Replace Parking Lot Lighting – 24 mercury vapor bulbs and magnetic ballasts were retrofitted with high pressure sodium bulbs and electronic ballasts at the Lawton Indian Hospital. Estimated Payback (6 years)

3. Replace Time Clock - A time clock that had failed was replaced so that air conditioning units could be shut off automatically instead of manually during unoccupied periods. Estimated Payback (2 years)

PORTLAND - The Portland Area supports conservation of energy in federal and tribally owned facilities operated directly by IHS or under P.L. 93-638. The following is a list of energy conservation projects implemented during FY 1997:

FEDERAL FACILITIES

Colville - PD0CO426C6 - Phase III of this project (pending closeout) replaced two out-dated electric (pre 1968) boilers with efficient boilers and installed new energy efficient lighting and windows. A new suspended ceiling was installed which will reduce the volume of conditioned space. This facility was audited in FY 1997 for energy conservation measures. Implementation of ECMs are pending.

Neah Bay - PO6NB008C6 - The building□s heat pumps and windows were replaced. Design for a new, efficient roof has been funded and FY 1998 construction is anticipated.

Fort Hall - Engineering Services, Seattle completed a Deep Look for the federally owned facilities. No viable energy conservation measures were discovered. The facilities staff are changing the lighting to more .....

Yakama - Evaluation of the buildings HVAC is pending an in-house assessment. The assessment will determine the adequacy of the existing HVAC equipment regarding heating/cooling loads.

Indian Tribal Consortium - The ITC Youth Residential Treatment Center, Spokane, was constructed to adhere to the most recent energy efficiency and water reduction guidelines. This facility came online in mid-FY 1996.

Northern Idaho - PO4NI006C6 - This project provided new energy efficient HVAC systems (including heat pumps, ductwork, air handlers and controls) for the main level zone and basement level zone of the Lapwai Indian Health Center in Lapwai, Idaho. In addition, new energy efficient lighting was installed in the basement. This project was closed out in FY 1997. An energy audit was completed in FY 1997. ECMs are pending implementation. - PO7NI006C6 - Energy audit performed by DOE/FEMP was completed. ECM implementation plan is pending.

Northwest Washington (Lummi) - PO7NW002C6 - This project was funded FY 1997 for design and construction to upgrade the clinic□s HVAC. New heat pumps and ductwork are to be provided. Completion scheduled for November 1998.

Warm Springs - PO7WA002C6- Warm Springs, Oregon. Energy audit report for the Quarters Units is near completion.

Wellpinit - PO4WE006C6 -This project provided new energy efficient HVAC systems (including heat pumps, ductwork, air handlers and controls) for the main level zone and basement level zone of the David C. Wynecoop Memorial Health Center in Wellpinit, Washington. New energy efficient lighting was installed in the basement.
Western Oregon - PO6WN008C6, Salem, Oregon - Construction for this project was accomplished in FY 1997 to provide an upgraded HVAC system. A four pipe hydronic system was reimplemented with the heat loop energized by new, efficient natural gas boilers. The chilled water loop is cooled by a new, efficient reciprocating chiller. Most of the building□s fan coils were either replaced or refurbished. The pneumatic controls were retrofitted for automatic energy conservation modes of operation. High pressure sodium lamps replaced mercury vapor lamps for the building□s exterior lighting.

Portland TRIBALLY OWNED FACILITIES

Fort Hall A/SAP, Fort Hall, Idaho - A repair project was completed to replace HVAC units and upgrade perimeter insulation.

Nanitch-Sahallie A/SAP, Salem, Oregon - A project was funded to replace obsolete and inefficient HVAC units including a lighting upgrade to current standards.

Puyallup A/SAP, Tacoma, Washington - A project was completed installing high energy efficiency boilers and associated control systems.

Warm Springs Health and Wellness Center - PO7WA002C6- Warm Springs, Oregon Energy audit report is completed.

Yakama A/SAP, Toppenish, Washington - A project was completed replacing HVAC units and adding proper roof insulation.

TUCSON - No information to report.

G. SOLAR AND OTHER RENEWABLE ENERGY

ALBUQUERQUE - Several projects were planned, under construction, or completed in FY 1998 that involved active solar technologies. Both the Santa Fe and the A-C-L Hospitals use solar

technologies; efforts are being made to improve their efficiency of operation. Design has been completed at A-C-L and construction is starting for a solar overtemperature protection system to prevent a dangerous potential over-heating situation. M&I funds are being used to implement this project, which is expected to cost about $200,000, including design fees. During January 1998, one of the underground solar water storage tanks was removed due to corrosion and lead paint, and was not replaced due to cost. This led to the solar radiator project.

A grant was received in late FY98 from the National Renewable Energy Lab (NREL) in Golden, Colorado to install 4 solar lights at the Quarters at A-C-L Hospital. NREL also recently awarded a grant to the Santa Fe Indian Hospital to refurbish its 20-year old solar system to make it operational once again.

BILLINGS - The use of solar energy in this geographical region is not viable. Wind generators at Browning, Montana, are being tested by the local power company. There are no alternative energy projects planned at this time.

OKLAHOMA - We hope to quickly revamp active solar panels that heat domestic water at the W.W. Hastings Indian Hospital in Tahlequah if we are able to proceed with the DOE Super ESPC.

TUCSON - No information to report. No plan has been developed to significantly increase the use of solar power or other renewable energy sources. No renewable energy projects were implemented in FY98 and none were proposed for future projects.

H. MINIMIZATION OF PETROLEUM-BASED FUEL USE

ALBUQUERQUE - Projects to minimize petroleum-based fuel use have not been implemented in the Albuquerque Area IHS. No additional projects have been identified in any of the energy conservation audits.

BEMIDJI - One project is proposed to convert four buildings from heating fuel oil and propand to natural gas. The project is in the planning phase at this time.

OKLAHOMA - Tiger Natural Gas completed an analysis of our FY97 natural gas consumption in an attempt to acquire a contract to supply us with non-tariff natural gas on the spot market. The Claremore Indian Hospital was the only one that qualified for transportation of gas via this method because they met the minimum annual consumption requirement of 20,000 MMBTU's. This minimum annual consumption requirement applies to Oklahoma Natural Gas, Arkla-NorAM Energy & the Tahlequah Public Works Authority. This minimum consumption amount was not lowered by the regulatory authority in the first quarter of CY98. Tiger Natural Gas projects that they could save us $16,500 annually (a 15% savings) if we procured natural gas through them for Claremore instead of through our current local distribution company.

We were able to get this spot-market natural gas contract in place with Tiger Natural Gas in April of 1998 for Claremore. We are piggybacking on to an existing contract that Tiger Natural Gas has with the Department of Veteran's Affairs Utilities Management Program in Portland, Oregon. We have saved $944 from April through July of this year. We expect to realize the remainder of our projected savings during the coming winter months.

Tiger Natural Gas has proposed a "Telemetry Utilities Management EnerCom System" to us which they taut as the low cost telemetry alternative for today's business. The EnerCom System consists of a meter that is tied to a facility's existing meter. The meter can be solar powered, battery powered, electrically powered or a combination of two power sources. The EnerCom System relays energy data to a EnerView Host where data is arranged in a

viewable format. Upon completion of data formatting, all information is then relayed to a software host for use by the client. This metering services program allows for daily/hourly meter reading, enhances accounts of actual consumption, allows you to plan your usage with production schedules and manage your tolerance levels daily. This program is available for all utility services including natural gas, electricity, and water. We will consider implementing this in FY99.

We may utilize the DOE Super ESPC rate reduction technology category to pursue acquiring expertise in the utility analysis arena to help us position our agency advantageously on the issue of end-user wheeling of electricity.

TUCSON - The major fuels at San Xavier are natural gas and electricity; the electricity is provided from coal-fired power plants. The major fuels used at Sells are LPG and electricity. The major power sources at Santa Rosa and Pisinemo are electricity.

Projects to minimize petroleum-based fuel use have not been implemented in IHS, other than energy conservation projects which result in less fuel use. Such projects will be considered in energy audits for each facility.

I. ENERGY EFFICIENT OPERATIONS AND MAINTENANCE PROCEDURES

ABERDEEN - The Area has installed a number of energy management systems at Area facilities to help reduce energy consumption. In previous years, local Facility Managers have been encouraged to implement no-cost and low-cost energy savings measures. The Area does not have energy data available to measure the reduction in energy consumption from these efforts.

ALBUQUERQUE - The maintenance staffs at all the Albuquerque Area hospitals conduct their operations in the most energy-efficient manner possible and are always striving to improve their operations. A major goal at all the hospitals is to replace the existing pneumatic controls with new direct digital controllers and user-programmable, computer-based energy management systems (EMS). These will provide chiller and boiler optimization, variable speed drive controls, optimal equipment start/stop and precise temperature controls. This kind of system is being installed as part of the ASU renovation. The cost estimates for the remaining hospitals are:

ACL	$104,600
Mescalero	$ 94,572
Santa Fe	$330,000
Zuni	$ 87,900

BEMIDJI - Procedures include time-day-scheduling of HVAC equipment, lighting and equipment, using energy efficient equipment for failed and scheduled replacement, installation of digital controls on HVAC.

BILLINGS - Operation and Maintenance (O&M) procedures include Preventive Maintenance (PM) techniques to keep the building operating systems at their highest efficiency levels. Examples involve boiler systems, air handlers, and light fixtures. Other facility areas are constantly monitored during daily inspections, such as weather stripping, window air seepage, unsealed wall penetrations, and overhead door areas.

PORTLAND - The Portland Area energy conservation program consists of management emphasis and field support of actions to achieve goals of the Energy Policy Act of 1992 and the Executive Order 12902. The Portland Area Indian Health Service Energy Guideline, dated October 5, 1992, implements operations and maintenance procedures for increased energy efficiency within the service units. Examples of energy consumption reduction methodology are:

- Energy Consumption Data Collection, Analysis, and Reporting
- Energy Audits
- Technical Assistance for Implementing Energy Conservation Measures

TUCSON - Thermostats and controls are replaced with automatic time-setback models to conserve energy where feasible; the use of occupant sensors has been implemented in some rooms. Water-saving valves and toilets are replacing less efficient ones as the older ones wear out. When equipment is replaced, more efficient units are specified. The use of outdoor air is used when feasible. As lighting is replaced, more efficient lamps and ballasts are used. Maintenance staff are trained in maintenance procedures which enhance energy efficiency.

J. ENERGY EFFICIENCY IN NEW SPACE

The Code of Federal Regulations (CFR)436 and CFR 435 (or state codes, whichever are more stringent), are used to ensure that designs of new buildings incorporate life-cycle cost methodologies. This applies to renovation of existing spaces.

ABERDEEN - The most recent new space completed in the Aberdeen Area is the youth regional treatment center at Wakpala, SD. Energy consumption at this facility was 72,022 BTU/gsf in FY'98 compared with 120,745 BTU/gsf Area-wide in FY'98. The Area will continue to consider energy consumption in the design of new space.

ALBUQUERQUE - The Code of Federal Regulations (CFR)436 and 435 (or state codes, whichever are more stringent), are used to ensure that designs of new buildings incorporate life-cycle cost methodologies. This applies to renovation of existing spaces. The Albuquerque Indian Hospital renovation project has been designed to be much more energy-efficient than the original facility.

BEMIDJI - Design of new and remodeled space incorporates energy efficient construction, materials, and equipment as a general requirement, although a policy is not in place.

BILLINGS - Energy efficient systems are designed into all of the projects overseen or developed by the Facilities Management Branch. Energy efficient building components and maintenance free devices are constantly reviewed and incorporated into new project designs.

New facilities constructed, or being constructed, in the Billings Area include Heart Butte Clinic, Pryor Clinic, Fort Belknap Health Center, and Northern Cheyenne Health Center. All are being constructed with energy efficient systems, insulated building envelopes, and HVAC control systems.

PORTLAND - The ITC Youth Residential Treatment Center Project Number 989 utilizes new practices and products for energy efficiency and water conservation. The new facility uses community water, electricity and natural gas as the energy sources. It commenced initial operation in the second quarter of FY 1996.

K. PERFORMANCE EVALUATIONS

ALBUQUERQUE - Position descriptions and performance evaluations of facility managers, designers, energy managers, their superiors, and others critical to the implementation of EO 12902 do not specifically address energy efficiency, water conservation, and solar and other renewable energy projects. However, such actions are included in performance evaluations since they are normal to the positions.

L. INCENTIVE AWARDS

ALBUQUERQUE - Except for awards and recognition from immediate supervisors, there are no incentive programs to reward exceptional performance in implementing the provisions of NECPA and EO 12902.

M. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS

ABERDEEN - The Aberdeen Area is aware of the requirement to procure energy efficient products. The Area does not have specific information available on product purchases made in 1998 because these products were purchased as part of larger construction projects. The Area will plan on providing information on product purchases in FY'99.

ALBUQUERQUE - Procurement of energy efficient products is a normal part of business. All personnel recommending and specifying products for procurement consider energy efficiency and cost savings in product selection.

BEMIDJI - One service unit has a written policy to determine if products are energy efficient, compatible, cost effective, conforming to performance requirements. Purchase of energy efficient products is a "normal business" activity.

BILLINGS - With the use of *SweetSource*, a product information catalog, new energy efficient products are reviewed by the Facilities Management Branch engineers. These computerized CD catalogs are updated and provided on a quarterly basis by the contracted vendor. Incorporation of selected products are provided in project design specifications.

PORTLAND - The October 5, 1992, Portland Area Indian Health Service Guideline, establishes model operations and maintenance purchasing procedures for increased energy efficiency within the service units.

The Portland Area via Engineering Services was able to procure the Department of Energy (DOE) for a □free□ energy audit at Northern Idaho. The DOE provides cost-free energy audits in exchange for the implementation of ten (10) year or less ECM payback.

TUCSON - The specifications written to replace equipment and products require all new items meet appropriate energy efficiency standards. This includes air conditioners, water heaters, lighting, and furnaces. As lamps and ballasts are replaced, energy efficient lamps (such as T-8 lamps) and electronic or magnetic ballasts are utilized. As toilets, faucets, and shower heads are replaced, the low-flow and water conserving type are used. As roofs are replaced, those with higher insulating values are used. The replacement of 15- and 20-year old furnaces and air conditioners with more efficient ones continue, using units with some of the most efficient available; continually burning pilot lights are replaced with electronic pilots.

N. ENERGY MANAGEMENT TRAINING

ALBUQUERQUE - The Albuquerque Area is no longer conducting energy management training for the Service Unit facility engineers and managers. It is up to each Service Unit to identify their own training needs and attend the appropriate courses offered through commercial vendors.

ANCHORAGE - Adam Scully presented a two day training course which was geared for an audience of facility managers and the Area Office staff. This course was much lighter and less intense than the course prepared for engineers wishing to pass the Certified Energy Engineer Exam The course covered HVAC, Lighting, Boilers, Life Cycle Costing, Controls and other aspects of Energy Management.

BILLINGS - The biggest energy drain in Montana and Wyoming is the heating requirement. Facility Managers are trained on the Direct Digital Controls (DDC's) of their specific HVAC system to

properly maintain and operate them in an efficient manner. Other energy management courses are offered when available within the area.

PORTLAND - The Area Energy Manager received training in Facilities Orientation I, containing a section on Energy Management.

TUCSON - The Tucson Area has two trained energy managers. Both have attended the IHS Energy Management training conducted by Headquarters staff. Two new facilities engineers will attend energy management training when possible.

O. ENVIRONMENTAL BENEFITS OF ENERGY MANAGEMENT ACTIVITIES

ALBUQUERQUE - Reduced energy usage will result in less demand for fossil fuels and will ensure a cleaner environment.

PORTLAND - The Portland Area Office has instituted a chlorofluorocarbon (CFC) reduction program for heating ventilation and air-conditioning (HVAC) systems at several sites.

FY 1996 and 1997 HVAC upgrades at Neah Bay Clinic (HCTR), Northern Idaho□s Lapwai Building #0001 (main HCTR building), Wellpinit□s Building #0005 (main HCTR bldg) and the Western Oregon Service Unit eliminated CFC gases in air conditioning operations at these facilities.

IHS gy Consumption And Cost Data

OPDIV
PREPARED BY: Adam T. Scully, P.E.
PHONE NUMBER: 301-443-7998

REPORTED YEAR: FY 1999
TITLE: IHS Energy Coordinator
DATE SUBMITTED: September 16,1999

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Site-Delivered Total MMBtu	Primary (Source) Total MMBtu	Carbon Emissions (Metric Tons)
Electricity	KWH	128,858,356.0	9,082.9	$0.070	/kwh	439,664.7	1,494,756.9	22,054
Fuel Oil	Thous. Gal.	1,367.2	1,281.0	$0.937	/gallon	189,631.9	189,631.9	3,783
Natural Gas	Thous. Cu. Ft.	552,230.0	1,474.3	$2.670	/thous. cu. ft.	569,349.1	569,349.1	8,238
LPG/Propane	Thous. Gal.	1,225.5	789.8	$0.644	/gallon	117,038.5	117,038.5	2,008
Coal	S. Ton				/S. ton	0.0	0.0	0
Purch. Steam	MMBtu				/MMBtu	0.0	0.0	0
Other	MMBtu				/MMBtu	0.0	0.0	
		TOTALS	$12,628			1,315,684.2	2,370,776.4	36,084

Gross Square Feet	6,509,570.0
Btu/Gross Square Foot	202.1
$/Gross Square Foot	$0.00

Tactical Vehicles/Equipment

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Total MMBtu
Auto Gas	Thous. Gal.				/gallon	0.0
Diesel	Thous. Gal.				/gallon	0.0
LPG/Propane	Thous. Gal.				/gallon	0.0
Aviation Gas	Thous. Gal.				/gallon	0.0
Jet Fuel	Thous. Gal.				/gallon	0.0
Navy Special	Thous. Gal.				/gallon	0.0
Other	BBtu				/Btu	0.0
		TOTALS	$0			0.0

Annual Expenditures:	
Current Fiscal Year	3,994,571.0
Next Fiscal Year	2,158,000.0
Annual Anticipated Savings, Energy, BTUs	1,754,000,000.0
Annual Anticipated Savings, $	5,550.0
Training:	
Current Year Expenditures for Training	24,300.0
Number of Personnel Trained	26.0
Utility Incentives:	
Incentives received in dollars	0.0
Funds spent in order to receive incentives	0.0
Annual Anticipated Savings, Energy, BTUs	0.0
Annual Anticipated Savings, $	0.0

1		2		3		4		5		6		7	
Annual Consumption AB	Annual Cost x1000 AB	Annual Consumption AN	Annual Cost x1000 AN	Annual Consumption AQ	Annual Cost x1000 AQ	Annual Consumption BE	Annual Cost x1000 BE	Annual Consumption BI	Annual Cost x1000 BI	Annual Consumption NA	Annual Cost x1000 NA	Annual Consumption NS	Annual Cost x1000 NS
18,221,378	973	27,582,249	2,700	9,824,500	745	3,537,591	182	6,718,949	524	15,415,320	1,079	4,639,648	241
316	211	718	858			133	88			24	20	67	50
16,533	60	284,608	290	37,689	169		0	28,740	89	91,527	426	109	1
124	73	0	0	276	203	27	23	11	13	564	293	0	0
GST 1,046,177		1,323,376		537,199		99,455		481,552		1,250,000		166,370	
1,309,385		543,000		400,000		0.0		31,760		0.0		0.0	
1,300,000		550,000		200,000		0.0		40,000		0.0		0.0	
0		0.0		0.0		0.0		1,745,000,000		0.0		0.0	
0		0.0		0.0		0.0		4,550		0.0		0.0	
0.0		15,000		0.0		0.0		0.0		0.0		0.0	
0.0		15		0.0		0.0		0.0		0.0		0.0	
0.0		0.0		0.0		0.0		0.0		0.0		0.0	
0.0		0.0		0.0		0.0		0.0		0.0		0.0	
0.0		0.0		0.0		0.0		0.0		0.0		0.0	
0.0		0.0		0.0		0.0		0.0		0.0		0.0	

8		9		10		11	
Annual Consumption OK	Annual Cost x1000 OK	Annual Consumption PH	Annual Cost x1000 PH	Annual Consumption PO	Annual Cost x1000 PO	Annual Consumption TU	Annual Cost x1000 TU
15,494,493	904	19,831,431	1,249	5,168,072	274	2,424,725	212
6	4	104	51	0	0		
44,882	176	35,386	232	7,441	27	5,315	5
0	0	172	136	12	11	39	39

432,417	729,115	301,450	142,459

0.0	1,667,406.0	8,500	34,500
0.0	0.0	43,000	25,000
0.0	0.0	0.0	9,000,000
0.0	0.0	0.0	1,000

1,800.0	0.0	0.0	7,500
3.0	0.0	0.0	8

0.0	0.0	0.0
0.0	0.0	0.0
0.0	0.0	0.0
0.0	0.0	0.0

Attachment A – Fiscal Year 1998 Estimated Data Consumption

INDIAN HEALTH SERVICES ENERGY CONSUMPTION AND COST DATA

OPDIV	IHS	REPORTED YEAR	FY 1997
PREPARED BY	Adam T. Scully, P.E.	TITLE	
PHONE NUMBER	301 443-7998	DATE SUBMITTED	15-Sep-98

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Site-Delivered Total MMBtu	Primary (Source) Total MMBtu	Carbon Emissions (Metric Tons)
Electricity	KWH	131,588,853.0	$9,568	$0.073	/kwh	448,981.2	1,526,430.7	22,521
Fuel Oil	Thous. Gal.	1,445.7	$1,436	$0.993	/gallon	200,520.1	200,520.1	4,000
Natural Gas	Thous. Cu. Ft.	362,315.0	$1,478	$4.080	/thous. cu. ft.	373,546.8	373,546.8	5,405
LPG/Propane	Thous. Gal.	1,234.9	$820	$0.664	/gallon	117,931.0	117,931.0	2,024
Coal	S. Ton				/S. ton	0.0	0.0	0
Purch. Steam	MMBtu				/MMBtu	0.0	0.0	0
Other	MMBtu				/MMBtu	0.0	0.0	
		TOTALS	$13,302			1,140,979.1	2,218,428.6	33,950

Gross Square Feet (thousands)	7,096.8
Btu/Gross Square Foot	160,774.1
$/Gross Square Foot	$1.87

Tactical Vehicles/Equipment

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Total MMBtu
Auto Gas	Thous. Gal.	N/A			/gallon	0.0
Diesel	Thous. Gal.	N/A			/gallon	0.0
LPG/Propane	Thous. Gal.	N/A			/gallon	0.0
Aviation Gas	Thous. Gal.	N/A			/gallon	0.0
Jet Fuel	Thous. Gal.	N/A			/gallon	0.0
Navy Special	Thous. Gal.	N/A			/gallon	0.0
Other	BBtu				/Btu	0.0
		TOTALS	$0			0.0

Attachment B – FY 1998 IHS Annual Energy Report

FY 1999 ESTIMATES AND FY 2000 PROJECTIONS.

Two additional versions of the energy conservation program data are attached and include the FY 1999 estimates and FY 2000 projections.

We will update the FY 1998 consumption data with actual data and submit that to you in the early part of November 1998.

DIRECT AGENCY EXPENDITURES

Direct expenditures on facility energy efficiency improvements		
Annual Expenditures (Thous. $) Current Fiscal Year		400,000
Annual Expenditures (Thous. $) Next Fiscal Year		700,000
Annual savings anticipated from expenditures	3,000 MMBTU	28,800(Thous. $)

We will update the FY 1998 project information and submit that to you in early November 1998,

ENERGY SAVINGS PERFORMANCE CONTRACTS

Number of ESP contracts awarded	None
Annual savings anticipated from ESP contracts	None

We will submit updated information with regards to ESPCs by early November, several people at the Area and ES level have given ESPC serious consideration.

UTILITY INCENTIVES

Incentives received	None	(Thous. $)
Funds spent in order to receive incentives	None	(Thous. $)
Annual savings anticipated from DSM activities	None	MMBTU

TRAINING

Current year expenditures for energy management training		8.1(Thous. $)
Number of personnel trained	25	

This year we traveled to Alaska to offer a two day course to 20 facility engineers and managers which covers the following topics:

a. Overview of Codes and Standards
b. Economics
c. Energy Audits/Instrumentation
d. Electrical System Utilization
e. Mechanical and HVAC systems
f. Utility & Process Systems Utilization (Processes)
g. Building Envelope
j. Energy Management Systems
k. Control Strategies
l. Thermal Energy Storage
m. Lighting
n. Boiler & Incineration Plants

o. Maintenance Program

Eighty engineers, managers, and technicians have attended this course. In the past three years 14 people (engineers and technicians) have taken a four hour exam administered by the Association of Energy Engineers (AEE). Nine passed the exam and are now recognized by AEE as Certified Energy Managers (CEMs).

ENERGY CONSUMPTION AND COST DATA (FY 1999 Estimates)

OPDIV	IHS	REPORTED YEAR	FY 1999 Estimates
PREPARED BY	Adam T. Scully, P.E.	TITLE	
PHONE NUMBER	301 443-7998	DATE SUBMITTED	16-Sep-98

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Site-Delivered Total MMBtu	Primary (Source) Total MMBtu	Carbon Emissions (Metric Tons)
Electricity	KWH	130,000,000.0	$9,500	$0.073	/kwh	443,560.0	1,508,000.0	22,249
Fuel Oil	Thous. Gal.	1,400.0	$1,500	$1.071	/gallon	194,180.0	194,180.0	3,874
Natural Gas	Thous. Cu. Ft.	360,000.0	$1,500	$4.167	/thous. cu. ft.	371,160.0	371,160.0	5,371
LPG/Propane	Thous. Gal.	1,200.0	$850	$0.708	/gallon	114,600.0	114,600.0	1,967
Coal	S. Ton				/S. ton	0.0	0.0	0
Purch. Steam	MMBtu				/MMBtu	0.0	0.0	0
Other	MMBtu				/MMBtu	0.0	0.0	
		TOTALS	$13,350			1,123,500.0	2,187,940.0	33,460

Gross Square Feet (thousands)	7,000.0
Btu/Gross Square Foot	160,500.0
$/Gross Square Foot	$1.91

Tactical Vehicles/Equipment

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Total MMBtu
Auto Gas	Thous. Gal.	N/A			/gallon	0.0
Diesel	Thous. Gal.	N/A			/gallon	0.0
LPG/Propane	Thous. Gal.	N/A			/gallon	0.0
Aviation Gas	Thous. Gal.	N/A			/gallon	0.0
Jet Fuel	Thous. Gal.	N/A			/gallon	0.0
Navy Special	Thous. Gal.	N/A			/gallon	0.0
Other	BBtu				/Btu	0.0
		TOTALS	$0			0.0

ENERGY CONSUMPTION AND COST DATA (FY 2000 Projections)

OPDIV	IHS	REPORTED YEAR	FY 1999 Estimates
PREPARED BY	Adam T. Scully, P.E.	TITLE	
PHONE NUMBER	301 443-7998	DATE SUBMITTED	16-Sep-98

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Site-Delivered Total MMBtu	Primary (Source) Total MMBtu	Carbon Emissions (Metric Tons)
Electricity	KWH	129,000,000.0	$10,000	$0.078	/kwh	440,148.0	1,496,400.0	22,078
Fuel Oil	Thous. Gal.	1,400.0	$1,600	$1.143	/gallon	194,180.0	194,180.0	3,874
Natural Gas	Thous. Cu. Ft.	350,000.0	$1,600	$4.571	/thous. cu. ft.	360,850.0	360,850.0	5,221
LPG/Propane	Thous. Gal.	1,200.0	$900	$0.750	/gallon	114,600.0	114,600.0	1,967
Coal	S. Ton				/S. ton	0.0	0.0	0
Purch. Steam	MMBtu				/MMBtu	0.0	0.0	0
Other	MMBtu				/MMBtu	0.0	0.0	
		TOTALS	$14,100			1,109,778.0	2,166,030.0	33,140

Gross Square Feet (thousands)	7,200.0
Btu/Gross Square Foot	154,135.8
$/Gross Square Foot	$1.96

Tactical Vehicles/Equipment

Energy Type	Reporting Units	Annual Consumption	Annual Cost (thous. $)	Unit Cost ($)		Total MMBtu
Auto Gas	Thous. Gal.	N/A			/gallon	0.0
Diesel	Thous. Gal.	N/A			/gallon	0.0
LPG/Propane	Thous. Gal.	N/A			/gallon	0.0
Aviation Gas	Thous. Gal.	N/A			/gallon	0.0
Jet Fuel	Thous. Gal.	N/A			/gallon	0.0
Navy Special	Thous. Gal.	N/A			/gallon	0.0
Other	BBtu				/Btu	0.0
		TOTALS	$0			0.0